

UNITED STATES  
DEPARTMENT OF JUSTICE

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Ref. 8HWM-FF

Mr Gary Baughman  
Hazardous Waste Facilities Unit Leader  
Colorado Department of Public Health and the Environment  
4300 Cherry Creek Drive South  
Denver, Colorado 80222-1530

SUBJECT: Approval determination of the OU 4 Phase II RFI/RI  
Workplan

Dear Mr Baughman

The purpose of this letter is to provide you with EPA's comments on the subject document. In general, EPA feels that the proposed field sampling approach is adequate to meet the data quality objectives of the phase II effort. However, the document failed to fully respond to our previous comments regarding the risk assessment. In addition, EPA has generated additional comments which are attached for your consideration.

In the interest of moving forward, EPA is granting conditional approval of the workplan until the attached comments are properly resolved. EPA encourages DOE to implement the portions of the workplan for which no comments were received

Please contact Arturo Duran of my staff at (303) 294-1080 with any questions you have on this matter

Sincerely,

Martin Hertz

Martin Hestmark, Manager  
Rocky Flats Project

cc Joe Schieffelin, CDPHE  
Harlan Ainscough, CDPHE  
Frazer Lockhart, DOE  
Randy Ogg, EG&G

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## ADMIN RECORD

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A-0004-000-86

## 1.0 GENERAL COMMENTS

- 1 Previous versions of the phase II work plan did not include a preliminary geophysical survey and well point installation and monitoring activities to better define the preferential pathways for groundwater contamination movement. The phased approach proposed in this final phase II work plan should better define areas for monitoring well placement.
- 2 Low water volumes in several wells caused sampling problems in the past. Alternative sampling techniques should be evaluated to resolve the problem.
- 3 All references to past documents published by the Rocky Flats Environmental Technology Site (RFETS) should reflect the name of the facility at the time the document was published. Referencing the new name to previously completed reports for the Rocky Flats Plant is inaccurate. To locate the documents, reviewers need the correct titles.
- 4 Overall, the risk assessment work plan provides a description of how a baseline risk assessment could be conducted, but provides no site-specific information. It generally follows EPA guidance (1989) but does not present enough detail to discern if the proposed plan is acceptable. Additionally, the work plan does not adequately incorporate the COC selection process outlined in the Final Human Health Risk Assessment Template for Rocky Flats Plant (EPA 1994a). Specific deviations from the work plan are noted below. For consistency with other sites at RFETS, the template should be followed. In particular, the sample summary tables presented in the Final Human Health Risk Assessment Template should be used to present site-specific data.

## 2.0 SPECIFIC COMMENTS

- 1 Section 1.2.5, page 1-5, first paragraph, third sentence This sentence refers to the "engineered cover and subsurface liner system." The reference to a subsurface liner system should be replaced with a reference to the subsurface drain. No liner system is proposed, only the subsurface drainage system which is not a liner.
- 2 Section 3.3.2, page 3-47 University of Colorado professor Jim White conducted a study of oxygen isotopes at RFETS a few years ago. It is not clear if the data generated by this study were incorporated into the mixing models. The oxygen isotope data should be reviewed and incorporated into the discussion to support some of the mixing models proposed in this section.
- 3 Section 3.3.2.5, page 3-64, first paragraph The text explains the different chemistry of well 2586 was possibly a result of improper construction ("leakage along the riser due to incomplete or failed grout"), so that water from the upper hydrostratigraphic unit (UHSU) may be mixing with water from the lower hydrostratigraphic unit (LHSU). Well 2586 should be considered for abandonment and replacement due to the possible cross contamination from the UHSU to the LHSU.

- 4 Section 5.2.3.2, page 5-30, second paragraph The text states the approach that will be taken if the test ground penetrating radar survey is successful, but does not indicate the contingency if the test survey is not successful. The text should be revised to indicate the contingency plan should the test survey not be successful.
- 5 Section 5.2.10.2, page 5-49, third paragraph The pump test to be conducted at location C is in an area that groundwater has been shown to be contaminated with fairly high levels of volatile organic compounds (VOCs) (including carbon tetrachloride, trichloroethene, and chloroform). The text should discuss or reference the section describing measures to deal with the contaminated groundwater produced by the pump test.
- 6 Section 5.4.4, page 5-60, second paragraph The text indicates that additional soil samples required to "fully complete the Phase I objectives" will be collected and analyzed in accordance with the field sampling plan described in the phase I RFI/RI work plan. The text does not indicate where or when the determination that more surficial soil samples are required will be made, or in what document the additional locations will be proposed. The text does not state if this information will be included in Technical Memorandum 5. The text should be clarified to indicate where the proposed additional soil locations will be presented.
- 7 Appendix A, page A-7, paragraph 5 The text states that the interceptor trench system wet well is not believed to have overflowed since the rerouting of the water to the temporary modular storage tanks (TMSTs). However, the wet well did overflow for a short period in July 1993 when the line connecting the wet well and pump house to the TMSTs broke. The text should be revised to either remove the statement that the wet well has not overflowed or include a discussion about the line break in July 1993.
- 8 Page 7-4, Figure 7.1-1 This figure illustrates the process that will be followed for the OU4 baseline risk assessment. At each of the four steps, the figure indicates that a technical memorandum will be submitted. If the template (EPA 1994a) is followed, these memoranda should be streamlined and present deviations from the process outlined in the template and results. To be conservative and for consistency with other sites, the template should be followed. The figure should be revised to indicate that the template will be used.

Rationale Baseline human health risk assessments for OU4 should follow RFETS guidance.

- 9 Page 7-7, Figure 7.1-2 Figure 7.1-2 presents the COC selection process that will be used for the OU4 risk assessment. Generally, this figure conforms to the process outlined in the template. The difference exists in the statistical comparison of background to site data. The figure states that the DOE Strawman Proposal will be used to conduct these statistical comparisons. Since this work plan was delivered to EPA, DOE has finalized its statistical methodology. The finalized guide for conducting statistical analyses of site data and background data is presented in Appendix A of the Final Human Health Risk Assessment Template. This guidance should be followed for background comparisons at OU4.

Additionally, this figure contains a typographical error. One of the final boxes is labeled "Special Case Containment of Concern." The word "containment" should be "contaminant." The figure should be corrected.

Rationale COC selection should follow EPA guidance (1994a, 1994b) and be correctly presented in the text

- 10 Page 7-8, Section 7.1.3.2 This section describes the COC selection and generation of a list of potential COCs from site data. The first bulleted paragraph states that chemicals positively detected in at least one sample will be included as potential COCs including "chemicals with no qualifiers attached (excluding samples with unusually high detection limits)." This statement is incorrect. Any chemical detected at least once, regardless of its sample quantitation limit (SQL), should be included as a potential COC. Chemicals with unusually high detection limits should be more closely evaluated if they could be eliminated due to a low frequency of detection. That is, a chemical may have a low frequency of detection due to high detection limits. These chemicals should not be eliminated as COCs due to the low frequency of detection without further evaluation, because they may be present at levels below the SQL but at a concentration associated with unacceptable risks.

The second bulleted paragraph in this section mentions comparison of chemicals to associated blank contamination. The text should elaborate on this comparison, and state that EPA guidance will be followed for the comparison (EPA 1989). Specifically, the 10-times and 5-times rules should apply. If the chemical is a common laboratory contaminant, the site samples must exceed associated blank concentrations by 10 times to be considered a detect. If the chemical is not a common laboratory contaminant, the site samples must exceed the associated blank concentration by 5 times. The text should be corrected.

Rationale The text should correctly describe how COCs will be selected.

- 11 Page 7-10, First Set of Bulleted Sentences This section describes the activities involved in exposure assessment. The text repeatedly states that "credible" exposure scenarios will be evaluated. The term "credible" should be replaced with "potentially complete." It is very difficult to decide how land will be used in the future and to assign credibility to exposure scenarios. Exposure scenarios that are potentially complete should be evaluated in the human health risk assessment. The text should be changed.

Rationale Appropriate terminology should be used.

- 12 Page 7-12, Figure 7.1-3 This figure presents the components of a completed exposure pathway. The figure indicates that a transport medium from the contaminant source to the receptor is required for a complete pathway. This is incorrect. Direct exposure pathways such as soil ingestion and dermal contact with contaminated soil, do not require a transport medium. Figure 7.1-3 should be corrected.

Rationale Figures should accurately represent information.

- 13 Pages 7-14 and 7-15, Section 7.1.4.4 This section discusses estimation of contaminant intake. It lacks site specific information, but generally describes the process of estimating contaminant intake. The Final Human Health Risk Assessment Template provides exposure pathways and parameters that should be used to estimate exposures for several exposure scenarios, including residential, occupational, recreational, construction worker, agricultural, and ecological researcher. These pathways and parameters should be considered as "default", and should be used for appropriate exposure scenarios. If DOE chooses to use exposure pathways and parameters for OU 4 which are different from those in the template (this includes not considering all pathways described in the template), the pathways, parameters, and rationale must be submitted to EPA and CDPHE for review and approval. By closely following the guidance in the template, the need for submitting an extensive exposure scenario technical memorandum will be eliminated, and the risk assessment process will be streamlined.

Rationale Regional guidance should be used in conducting a risk assessment unless there is a scientific justification for deviating due to OU 4 specific conditions.

- 14 Page 7-15, Second Bulleted Paragraph This paragraph is titled "Body weight and inhalation," but describes soil ingestion rates at different ages. The paragraph should be retitled or a description of body weight and inhalation should be provided.

Rationale Titles and text should correspond.

### 3 0 RESPONSE EVALUATION FOR BASELINE RISK ASSESSMENT WORK PLAN

- 1 General Comment 5 Section 7 provides a comprehensive outline of how the baseline risk assessment (BRA) will be performed. In general, the outline is complete, however, more specific information should be provided on certain steps of the risk assessment. The BRA is ambiguous without specific information.

Response This comment has not been addressed. The work plan provides a general description for conducting a risk assessment, but does not provide specific exposure pathways, exposure parameters, or statistical analyses to select contaminants of concern (COCs). The workplan should state that this detailed information will be submitted as technical memoranda as needed during the risk assessment process.

- 2 General Comment 6 Groundwater exposure pathways are not described in the BRA and do not appear to have been included in any exposure scenario. Groundwater exposure pathways are potentially complete and may pose significant health risks. They should be included in the BRA, conservative exposure parameters should be used to assess complete exposure pathways.

Response The response is adequate.

- 3 Specific Comment 9 Section 7, Page 7-2, Second Reference IRIS is listed at the end of the reference. IRIS is an independent source of information, it is not part of the cited document. The IRIS reference should be listed separately.

Response The response is adequate.

- 4 Specific Comment 10 Section 7, Page 7-5, Section 7.1.3.1 This section identifies criteria that will be used to evaluate analytical data. This section should describe how the data will be evaluated with respect to blank samples. If a chemical is a common laboratory contaminant, Risk Assessment Guidance for Superfund (RAGS) (EPA 1989) recommends that it is retained in the risk assessment only if it is 10 times greater than the concentration of that chemical in the blank. If it is not a common laboratory contaminant, the chemical is retained as a COC if it is five times greater than the chemical concentration in the blank. This section should also list evaluation of tentatively identified compounds as part of the data evaluation.

Response The response is inadequate The evaluation of data against blank samples is not fully described EPA guidance should be followed in eliminating detected chemicals as blank contamination EPA's Final Human Health Risk Assessment Template (EPA 1994a) also outlines procedures for selecting COCs and evaluating blank contamination However, evaluation of tentatively identified compounds has been included in the text

- 5 Specific Comment 11 Section 7, Page 7-6, Last Paragraph, Second Sentence *The text states that guidelines for evaluation of data validation as described in RAGS will be used in assessing data usability A description of how this evaluation will be performed is necessary Level III and IV data are required by EPA for use in risk assessments*

Response The response is inadequate The text does not state that Level III and IV data must be used in the risk assessment A statement to this effect should be added

- 6 Specific Comment 13 Section 7, Page 7-7, Third Bullet *The text states that chemicals detected at levels significantly above their naturally occurring concentrations will be retained as contaminants of concern A complete description of where background samples will be collected, how many samples will be collected, and the type of statistical tests that will be applied to determine significant differences should be provided Adequate information should be provided to allow the reader to determine if the background analysis has been carried out correctly Background analyses are extremely important to the risk assessment process, as they assist with determination of achievable cleanup levels and selection of site-related contaminants of concern*

Response The response is inadequate The text now states that background data from the Background Geochemical Report will be used However, it does not describe the statistical methodology that will be employed to determine if site concentrations exceed background levels Statistical methodology should be described in the text

- 7 Specific Comment 14 Section 7, Page 7-10, First Bullet *The text reads, "maintenance workers could have incidental contact via dermal absorption for direct soil ingestion, inhalation of vapor phase contaminants, " This statement is not clear The text should*

indicate if both direct contact with soil and soil ingestion will be evaluated or if only soil ingestion will be assessed

Response The response is adequate

- 8 Specific Comment 16 Section 7, Page 7-11, Development of Exposure Concentrations, First Paragraph The first sentence states that exposure point concentrations of COCs in soil, air, and water will be estimated using spreadsheet calculations and computer models. The text should describe in more detail the computer models that will be used. In addition, water is listed in this paragraph. The section describing exposure scenarios did not indicate that there are exposure pathways associated with groundwater or surface water. The text should be modified to clarify this discrepancy.

Response The response is adequate

- 9 Specific Comment 17 Section 7, Page 7-11, Development of Exposure Concentrations, Second Paragraph The text states that "Depending on the spatial variability of contamination, different averaging may apply to each contaminant." This statement should be clarified. It is not clear what is meant by the term "spatial variability." The text should state whether it is referring to the distribution of the data or the variability of the samples onsite. Typically, if a given contaminant exhibits a log-normal distribution, the upper 95 percent confidence limit of the geometric mean is used as the exposure point concentration. If the data for a contaminant are normally distributed, then the upper 95 percent confidence limit on the arithmetic mean is used as the exposure point concentration. It is not clear if this is what the statement in the text is describing.

Response The response is inadequate. The comment has not been addressed.

- 10 Specific Comment 18 Section 7, Page 7-14, Third Paragraph, Last Sentence The text states that if health-based criteria are not available for a chemical, a health-protective number will be derived using established procedures listed in RAGS (EPA 1989). This statement should be clarified. RAGS states that a toxicity value may be derived using EPA methodology. This derivation should be done in conjunction with the regional risk assessment contact, who will submit the derivation to the Environmental Criteria and Assessment Office (ECAO) for



approval The text should provide more information regarding how toxicity values will be derived

Response The response is adequate

- 11 Specific Comment 19 Section 7, Page 7-18, Second Paragraph, Second Sentence The text states that slope factors will be used to estimate radiological risks from exposure for up to four pathways inhalation, ingestion, air immersion, and external irradiation It is not clear what is meant by air immersion [Health Effects Assessment Summary Tables] HEAST 1993 does not present a toxicity value for air immersion This discrepancy should be clarified

Response The response is adequate

- 12 Specific Comment 22, Table C-1 The maximum contaminant levels (MCLs) for radium-226 and radium-228 are incorrect according to the Drinking Water Regulations and Health Advisories recommended by the Office of Water, May 1993 (EPA 1993) The MCLs recommended by the EPA Office of Drinking Water are 20 pCi/L

Table C-1 does not list the MCL or the maximum contaminant level goal (MCLG) for butyl benzyl phthalate The EPA Office of Drinking Water recommends an MCL of 0.1 micrograms per liter ( $\mu\text{g/L}$ ) and an MCLG of 0  $\mu\text{g/L}$  The table should be corrected

Response The response is adequate

- 13 Specific Comment 23, Table C-2 It is not clear why several of the columns carry identical headings but list different numbers For example, there are two columns with the heading "SDWA Maximum Contaminant Level," and there are two columns with the heading "SDWA Maximum Contaminant Level Goal " There should be a footnote indicating the differences between the columns of numbers

The MCL for endrin is incorrect The number should be 0.1  $\mu\text{g/L}$  (EPA 1993) The number presented is 2.0  $\mu\text{g/L}$  The table should be corrected

*The MCL for lead is incorrect The value listed is 15 µg/L The Office of Water (EPA 1993) recommends a value of 0 µg/L*

Response The response is inadequate The MCL for endrin has been corrected Footnotes have been added to the table which seem to indicate that the first column of each set lists MCLs from 1990, while the second column presents the most recent values The table should present only the most recent values and should have only one column for MCLs and one for MCLGs

The MCLs for lead demonstrate this inconsistency The first column lists the 1990 MCL value of 50 µg/L, while the second column lists the currently recommended value of 0 µg/L Only current MCLs and MCLGs should be provided

#### 40 REFERENCES

- U S Environmental Protection Agency (EPA) 1989 Risk Assessment Guidance for Superfund, Volume I Human Health Evaluation Manual (Part A) Interim Final EPA/540/1-89/002 Office of Emergency and Remedial Response, Washington, D C December
- EPA 1993 Office of Water, Drinking Water Regulations and Health Advisories May
- EPA 1994a Final Human Health Risk Assessment Template Rocky Flats Plant August
- EPA 1994b Evaluating and Identifying Contaminants of Concern for Human Health Region 8 Superfund January